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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEUNG, JENNIFER A

ART UNIT

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10/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/830,030	<b>Applicant(s)</b> ICHIKAWA ET AL.	
	<b>Examiner</b> JENNIFER A. LEUNG	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-32 and 34 is/are pending in the application.
- 4a) Of the above claim(s) 12-15,19-32 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-11 and 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 12, 2008 has been entered.

### ***Status of the Claims***

2. Claims 2, 3, 33, 35 and 36 are cancelled. Claims 12-15, 19-32 and 34 are withdrawn. Claims 1, 4-11 and 16-18 are under consideration.

### ***Specification and Drawings***

3. The amendment filed October 9, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The new drawing in FIG. 28B and its corresponding description in the amended specification are not supported by the original disclosure. In particular, the original disclosure does not provide support for an embodiment where undulated walls are combined with flat walls, with the undulated walls being "out-of-phase" with one another (i.e., where each recession faces an opposite recession, and each protrusion faces an opposite protrusion).

Applicant stated in the amendment filed October 9, 2007 that, "[s]upport for this amendment can be found throughout applicants' specification, for example, at pages 9, 18, 25,

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26, and 31-32." (see response; page 14, first paragraph). However, it is noted that for each embodiment where undulated walls are combined with flat walls (see embodiments shown in FIGs. 3 and 4; also, specification page 31, line 13 to page 33, line 18), the undulated walls are always "in-phase" with one another (i.e., where each recession faces an opposite protrusion).

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamada (JP 05-123580).

Regarding claims 1, 4 and 7, Hamada (see embodiment shown in FIGs. 2(a) and 2(b); abstract; machine translation) discloses a honeycomb structure **1** having a plurality of cell passages (i.e., the four cells located at the very center of the honeycomb structure) defining a cell passage direction which are mutually parallel in the cell passage direction; wherein,

(1) intersection portions between walls defining said cell passages have a predetermined pitch in cross-sections perpendicular to said cell passages and are located in a pattern; (2) each of said cell passages has an adjacent pair of undulating wall face portions of said walls excluding said intersection portions (i.e., defined by wavy walls **4**), each undulating wall face portion having an undulated shape including recessions and protrusions in both the cell passage direction and the cross-sectional direction perpendicular to said cell passage direction; and (3) for each cell

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passage, the undulating wall face portions of the adjacent pair are positioned such that (i) corresponding protrusions of each of the adjacent undulating wall face portions face one another and corresponding recessions of each of the adjacent wall face portions face one another, or (ii) corresponding protrusions of one of the adjacent undulating wall face portions face recessions of the other; and (4) an adjacent pair of flat wall face portions (i.e., defined by the flat walls **3** that pass through the center of the honeycomb structure) is located opposite the adjacent pair of undulating wall face portions.

Regarding claim 8, the cell passages formed by said wall face portions of said walls having an undulated shape and cell passages defined by said wall face portions of said walls having a flat shape coexist in a discontinuous manner (see FIGs. 2(a),(b)).

Regarding claim 9, the honeycomb structure has a center portion (i.e., center section) surrounded by an outer portion (i.e., periphery section), the center portion comprising cell passages defined by undulated wall face portions; the outer portion comprising cell passages defined by flat wall face portions, the thickness of the wall of the cell passages at the outer portion is greater than that of the wall of the cell passages at the center portion (see, for example, sections [0019] and [0021]; FIGs. 2(a),(b)).

Instant claims 1, 4 and 7-9 structurally read on the apparatus of Hamada.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580) in view of Yutake et al. (GB 2,071,640) and Maus et al (WO 96/12876 corresponding to US 6,274,099).

Hamada is silent as to the honeycomb structure comprising an undulated deformation that is greater at the outer portion than at the center portion. Yutake et al. teaches the provision of a honeycomb structure having the channels in the outer region clogged for improving the thermal insulation. Maus et al. teaches the provision of a honeycomb structure having a greater deformation at its outer region, which closes off the channels in the outer region (see column 4, lines 32-55). It would have been obvious to one having ordinary skill in the art to configure the honeycomb structure of Hamada so that the deformation at the outer region is greater than at the center region, so as to improve the thermal insulation of the structure as taught by Yutake et al. and Maus et al.

6. Claims 6, 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580).

Regarding claim 6, the amplitude of the undulated wall appears to be at least 150% the

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thickness of the wall (see Hamada, for example, Figs. 1-2). Hamada also discloses that the amplitude may be such that the wave height is 0.5 mm or more (see section [0020]). Although an amplitude of at least 150% of the thickness of the wall is not specifically stated, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate amplitude for the undulations relative to the thickness of the walls, on the basis of suitability for the intended use thereof, because where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, *In re Aller*, 105 USPQ 233.

Regarding claim 10, Hamada discloses that the honeycomb structure may be made from a variety of materials, including ceramics and activated carbon (see section [0032]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to select a claimed material (e.g., ceramics such as cordierite or alumina, etc., or an activated carbon such as adsorbent activated charcoal) for forming the honeycomb structure in the modified apparatus of Hamada, on the basis of suitability for the intended use thereof, because the claimed materials are conventional in the art as honeycomb making.

Regarding claim 16, discloses that the honeycomb structure has an undulated surface for increasing the surface area, and may carry a catalyst on the surface thereof for purifying exhaust gas (see section [0020]). Placing the honeycomb structure in a housing (e.g., when incorporated as a converter; see section [0044]) is inherent therein.

7. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580) in view of Abe et al. (US 5,459,119).

Hamada is silent as to the honeycomb structure having the claimed wall thickness and

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porosity. Abe et al., however, teaches a honeycomb structure having the claimed wall thickness and porosity (see column 7, lines 31-46). Furthermore, the specific wall thickness and porosity of the honeycomb structure are not considered to confer patentability to the claim, since the precise wall thickness and porosity of the honeycomb structure would have been considered a result effective variable by one having ordinary skill in the art. As such, without more, the claimed wall thickness and porosity of the honeycomb structure cannot be considered "critical". Accordingly, one having ordinary skill in the art would have routinely optimized the wall thickness and porosity of the honeycomb structure in the apparatus of Hamada to obtain a desired level of exhaust gas purification, as suggested by Abe et al, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (JP 05-123580) in view of Sugita et al. (JP 10-059784).

Hamada is silent as to the honeycomb structure having the instantly claimed cell density. Sugita et al., however, teaches the provision of an undulated-wall honeycomb structure having a plurality of cell passages, wherein the cell density is normally 280 cpsi (see abstract). It would have been obvious to one having ordinary skill in the art to select an appropriate cell density, such as the cell density taught by Sugita et al., for the honeycomb structure of Hamada, in order to obtain the desired purification of exhaust gas, on the basis of its suitability for the intended use as a matter of obvious design choice, and where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.



***Response to Arguments***

9. Applicant's amendment has overcome the rejections of claims 1, 4-11 and 16-18 under 35 U.S.C. 112, first and second paragraphs. Accordingly, said rejections have been withdrawn.

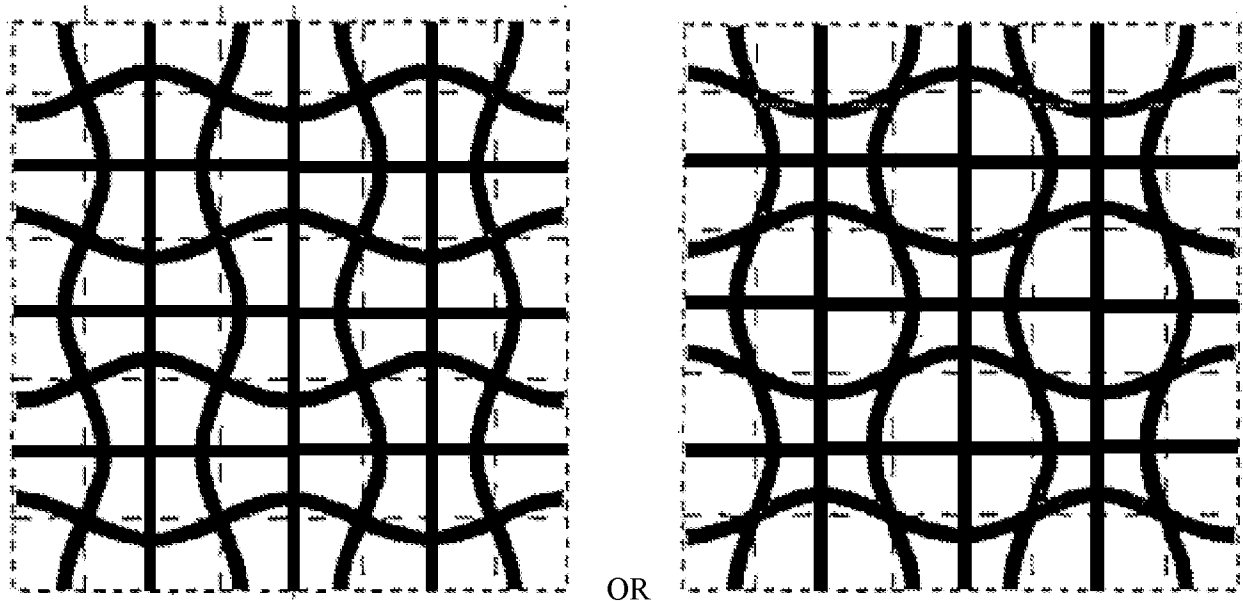
10. Applicant's arguments with respect to the objections under 35 U.S.C. 132(a) to new Fig. 28B and its new description in the specification have been fully considered, but they are not persuasive. Applicant (at page 9, last paragraph) argues,

“...while Fig. 3 shows undulated walls where each recession faces an opposite protrusion, Fig. 4 shows undulated walls where recessions and protrusions face opposite recessions and protrusions, respectively. Accordingly, one skilled in the art would easily understand that new Figs. 28A and 28B would result from the structures shown in Figs. 3 and 4, especially since Applicants have demonstrated in Figs. 1A and 1B how lateral and longitudinal cross sections of the cells are depicted.”

The Examiner respectfully disagrees.

Firstly, for clarification, it appears that Applicant intended to argue “*adjacent* protrusion”, and recessions and protrusions that face “*adjacent* recessions and protrusions, respectively.” (i.e., see Applicant's hand-written annotations made to FIGs. 3 and 4, attached to the amendment filed August 12, 2008).

Secondly, the Examiner maintains that the honeycomb structures shown in FIGs. 3 and 4 (in the X-Y plane) would not produce the Y-Z plane illustrated in FIG. 28B, in which each recession faces an opposite recession, and each protrusion faces an opposite protrusion, with the flat wall therebetween. In fact, the honeycomb structures shown in FIGs. 3 and 4 would both produce the Y-Z plane illustrated in FIG. 28A. In order for the Y-Z plane in FIG. 28B to occur, the corresponding X-Y plane of the honeycomb structure would have to look like, for example,



However, neither of the above illustrated configurations is supported by the original disclosure.

FIG. 28B and its description thus constitute new matter.

11. Applicant's arguments with respect to the rejection of claims 1, 4 and 7-9 under 35 U.S.C. 102(b) as being anticipated by Hamada (JP 05-123580), and the rejections of claims 5, 6, 10, 16, 11, 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Hamada in further view of secondary references, have been fully considered, but they are not persuasive.

Applicant (at page 10, last two paragraphs) argues that Hamada, taken alone or in view of secondary references, fails to disclose or adequately suggest the honeycomb structure now recited in independent claim 1.

The Examiner respectfully disagrees. Claim 1 instantly recites, an "undulated-wall honeycomb structure having a plurality of cell passages defining a cell passage direction" (lines 1-2), wherein the cells of said plurality of cell passages meet the criteria specified under items (1), (2), (3) and (4). Thus, any undulated-wall honeycomb structure having at least two cells meeting the specified criteria will read on the claim.

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As noted in FIGs. 2(a) and 2(b) of Hamada, the four cells at the very center of the honeycomb structure meet the specified criteria, since each of the four cells are defined by an adjacent pair of undulated wall face portions and an adjacent pair of flat wall face portions, wherein the adjacent pair of flat wall face portions is located opposite the adjacent pair of undulating wall face portions.

It appears that Applicant is arguing that all of the cell passages in the honeycomb structure must meet the criteria specified under items (1), (2), (3) and (4). However, this feature is not specified in claim 1. The dependent claims (for example, claims 8 and 9) further suggest that not all of the cells in the honeycomb structure must meet the specified criteria.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/  
Primary Examiner, Art Unit 1797